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Feb 6, 2001

US-PAT-NO: 6184440

DOCUMENT-IDENTIFIER: US 6184440 B1

TITLE: Transgenic plants of altered morphology

DATE-ISSUED: February 6, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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Yissum Research Development Company of the Hebrew University of Jerusalem				IL		03

APPL-NO: 09/ 006632 [PALM]

DATE FILED: January 13, 1998

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
IL	121404	July 27, 1997

INT-CL: [07] C12 N 5/04, C12 N 15/29, C12 N 15/31, C12 N 15/62, C12 N 15/82, C12 N 15/90, A01 H 1/00, A01 H 5/00, A01 H 5/10

US-CL-ISSUED: 800/290; 435/69.7, 435/69.8, 435/419, 435/468, 800/287, 800/284, 800/288

US-CL-CURRENT: 800/290; 435/419, 435/468, 435/69.7, 435/69.8, 800/284, 800/287, 800/288

FIELD-OF-SEARCH: 435/410, 435/419, 435/468, 435/69.7, 435/69.8, 800/278, 800/287, 800/288, 800/290, 800/295, 800/298, 800/284

PRIOR-ART-DISCLOSED:

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PATENTEE-NAME

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August 1992

Kilburn et al.

435/179

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<input type="checkbox"/> <u>5496934</u>	March 1996	Shoseyov et al.	536/23.7
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<input type="checkbox"/> <u>5705375</u>	January 1998	Van Ooyen et al.	435/468

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FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
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WO 97/28256	August 1997	WO	

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ART-UNIT: 168

PRIMARY-EXAMINER: Fox; David T.

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ATTY-AGENT-FIRM: Pennie & Edmonds LLP

ABSTRACT:

The present invention discloses genetically engineered plants which display altered structure or morphology. The transgenic plants express a cell wall modulation transgene or gene construct that results in the altered structure or morphology. The altered structure or Morphology can be associated with, for example, altered biomass, growth, yield, greater or less resistance to biodegradation, more or less digestible to ruminants, altered cellulose content, larger leaves/normal hypocotyls or smaller leaves/longer hypocotyls, etc. compared to a non-transgenic plant of the same species. The cell wall modulation transgene can be any cellulose binding domain, a cellulose binding protein, or a cell wall modifying protein or enzyme such as endoxyloglucan transferase, xyloglucan endo-transglycosylase, an expansin, cellulose synthase, or a novel isolated endo-1,4-.beta.-glucanase of *Arabidopsis thaliana*. The invention also discloses transgenic plants containing a gene construct comprising a promoter operably linked to the cell wall modulation protein or polypeptide gene and may further comprise a sequence encoding a secretion signal peptide. In particular, the invention discloses transgenic plants containing a gene construct comprising the cell promoter, operably linked to the cell signal peptide and any cellulose binding domain. Methods for modulating plant growth by transgenic expression of a cell wall modulating protein or polypeptide are also disclosed. The present invention also discloses a novel, isolated *Arabidopsis thaliana* endo-1,4-.beta.-glucanase gene (cell1), its promoter (cell1 promoter) and polypeptide (Cell1) and recombinant nucleic acid vectors containing the cell gene with or without a secretion signal peptide sequence and/or the cell1 promoter.

18 Claims, 47 Drawing figures

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